

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
29 January 2004 (29.01.2004)

PCT

(10) International Publication Number
WO 2004/010201 A3

(51) International Patent Classification⁷: **G11B 7/085,**
7/135

Holstlaan 6, NL-5656 AA Eindhoven (NL). **OPHEY,**
Willem, G. [NL/NL]; c/o Prof. Holstlaan 6, NL-5656 AA
Eindhoven (NL).

(21) International Application Number:

PCT/IB2003/002974

(74) Agent: **DEGUELLE, Wilhelmus, H., G.;** Philips Intel-
lectual Property & Standards, Prof. Holstlaan 6, NL-5656
AA Eindhoven (NL).

(22) International Filing Date: 2 July 2003 (02.07.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

02078050.8 23 July 2002 (23.07.2002) EP
03100876.6 2 April 2003 (02.04.2003) EP

(71) Applicant (for all designated States except US): **KONIN-
KLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW,
MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC,
SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

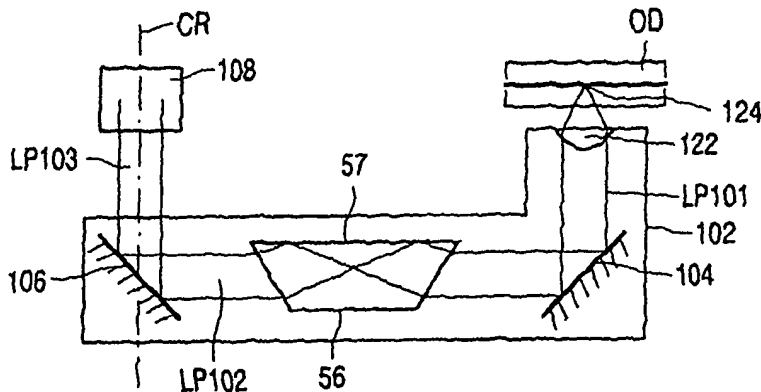
(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted
a patent (Rule 4.17(ii)) for the following designations AE,
AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA,
CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES,

[Continued on next page]

(54) Title: OPTICAL SCANNING DEVICE



(57) Abstract: An optical
scanning device for scanning an
information layer of an optical
record carrier and including a
rotary arm (2; 102; 202; 302;
402; 502) which is arranged to
swing about a rotation axis (CR)
to alter an angular position of
the rotary arm about the rotation
axis; a detector arrangement (10)
arranged separate from the rotary
arm (2; 102; 202; 302; 402; 502)
for detecting a radiation beam
spot, the radiation beam spot (40;
140; 240; 340; 440; 540) having
an angular disposition; a first
reflective surface (4; 104; 204; 304;
404; 504) attached to the rotary arm (2; 102; 202; 302; 402; 502); a second reflective surface (6; 106; 206; 306; 406; 506) attached to the rotary arm (2; 102; 302; 402; 502); a first light path (LP 1; LP 101; LP201; LP301; LP401; LP501) running from a location on the record carrier to said first reflective surface; a second light path (LP2; LP102; LP202; LP302; LP402; LP502) running from said first reflective surface to said second reflective surface; a third light path (LP3; LP103; LP203; LP303; LP403; LP503) running from said second reflective surface to said detector arrangement (10). The rotary arm includes at least one optical inversion element (52; 54; 56; 58; 64; 66) arranged such that a dependence between variation of the angular disposition of the radiation beam spot and variation of the angular position of the rotary arm is reduced.

WO 2004/010201 A3



FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(88) Date of publication of the international search report:
21 May 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB 03/02974

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G11B7/085 G11B7/135

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G11B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

WPI Data, PAJ, EPO-Internal, IBM-TDB

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 1999, no. 04, 30 April 1999 (1999-04-30) & JP 11 016195 A (TOSHIBA CORP), 22 January 1999 (1999-01-22) abstract	1-11
A	US 2001/007547 A1 (NISHIKAWA HIROSHI ET AL) 12 July 2001 (2001-07-12) the whole document	1-11
A	US 6 215 755 B1 (KWIATKOWSKI STEPHEN L ET AL) 10 April 2001 (2001-04-10) the whole document	1
	--- -/--	

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

5 March 2004

Date of mailing of the international search report

18/03/2004

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Annibal, P

INTERNATIONAL SEARCH REPORT

Information Application No

PCT/IB 03/02974

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PATENT ABSTRACTS OF JAPAN vol. 014, no. 477 (P-1118), 17 October 1990 (1990-10-17) & JP 02 192043 A (FUJITSU LTD), 27 July 1990 (1990-07-27) abstract ---	1-11
A	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 04, 4 August 2002 (2002-08-04) & JP 2001 357549 A (FUJITSU LTD), 26 December 2001 (2001-12-26) cited in the application abstract -----	1-11

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB 03/02974

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 11016195	A	22-01-1999	NONE	
US 2001007547	A1	12-07-2001	JP 11134680 A	21-05-1999
			JP 11134683 A	21-05-1999
			JP 11134684 A	21-05-1999
US 6215755	B1	10-04-2001	NONE	
JP 02192043	A	27-07-1990	JP 2870775 B2	17-03-1999
JP 2001357549	A	26-12-2001	NONE	